



# Battery Worker Safety

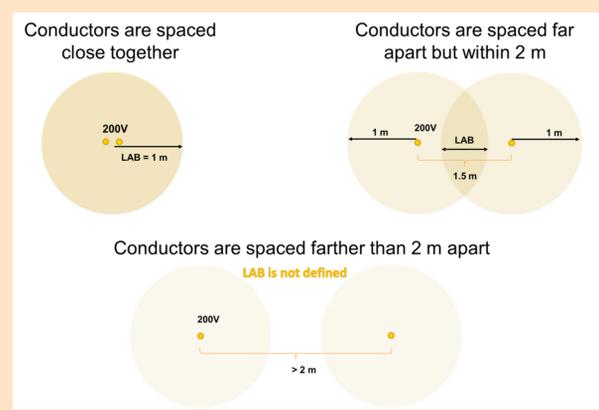
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## Battery hazardous energy control is critical to keeping workers safe in the energy transition

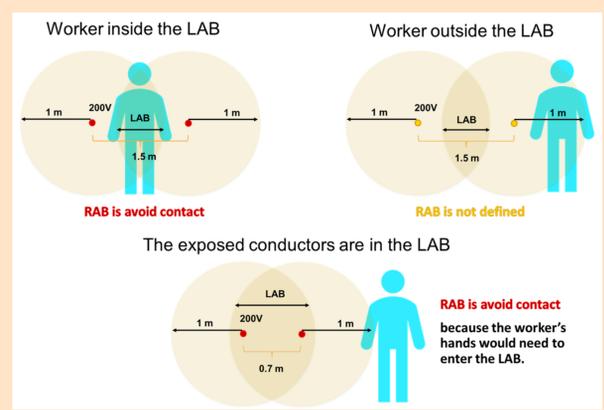
## Publications

- D. M. Rosewater, "Reducing Risk when Performing Energized Work on Batteries," 2023 IEEE IAS Electrical Safety Workshop (ESW), March 2023, Reno, NV
- D. M. Rosewater "Reducing Risk when Performing Energized Work on Batteries," submitted to the IEEE Transactions on Industry Applications by invitation, April 2023
- D. M. Rosewater, "Reducing Risk in the Design of Batteries," 2023 Battcon Conference, May 2023, Orlando, FL
- D. M. Rosewater, "Reducing Risk when Performing Energized Work on Batteries," 2023 EFCOG Electrical Safety Workshop, July 2023, Albuquerque, NM



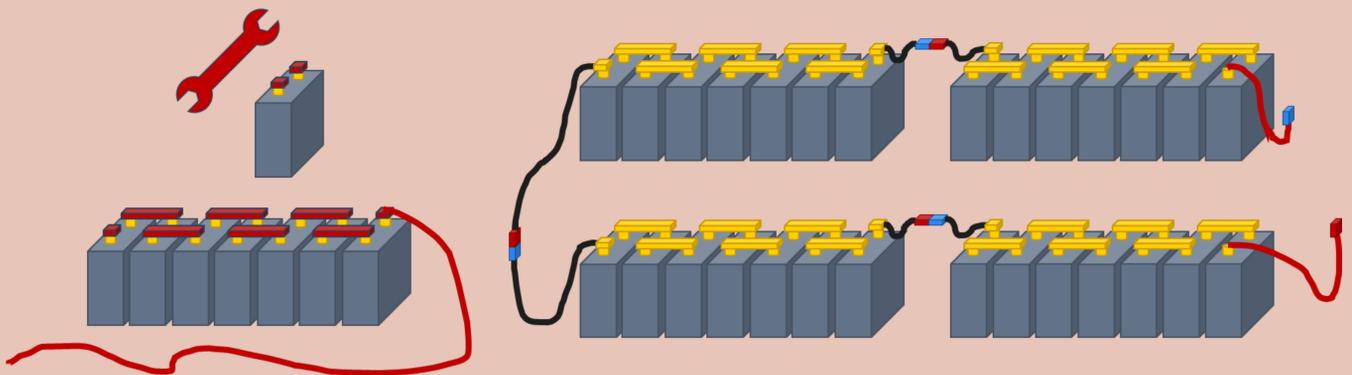
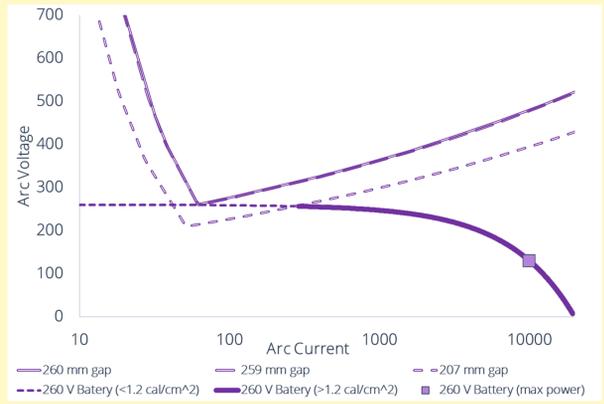
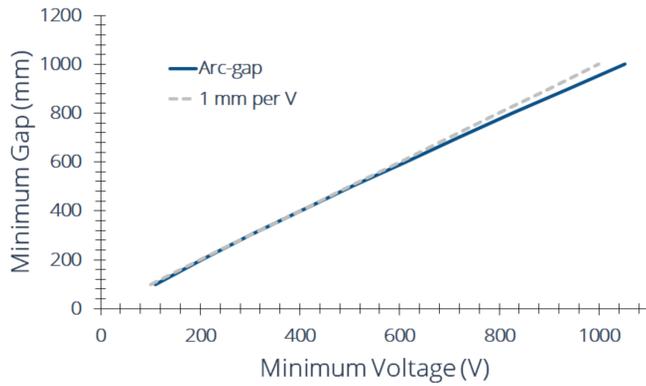
## Shock

The risk of an shock in ungrounded batteries depends on electrode spacing. This section presents an interpretation of the limited and restricted approach boundaries (LAB & RAB) for shock hazard in NFPA 70E that accounts for conductor spacing.



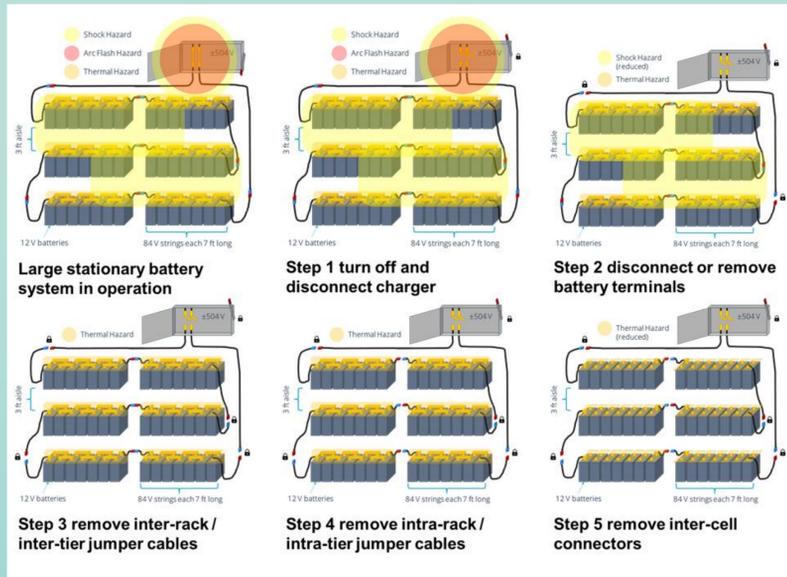
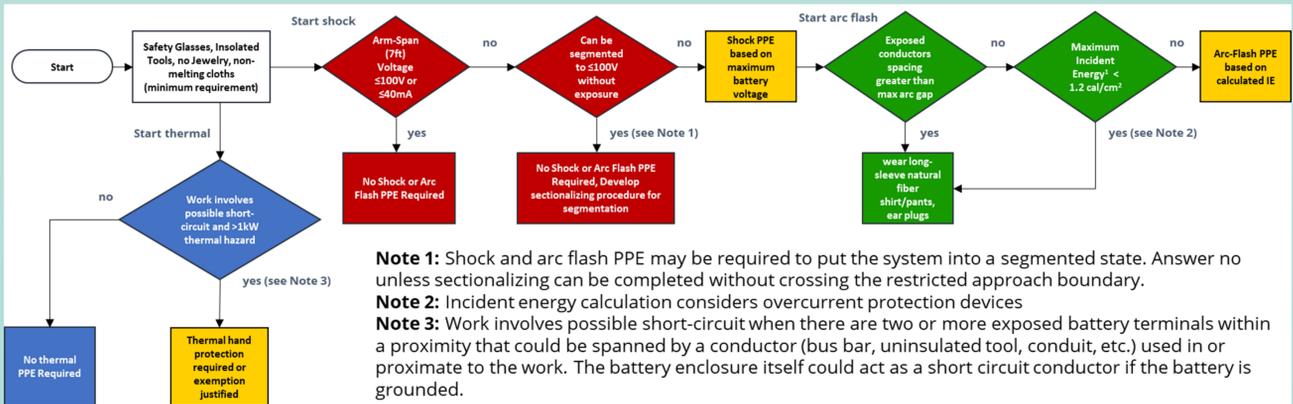
## Arc Flash

Just as with shock hazard in batteries, the risk of an arc flash is highly dependent on the spacing of electrical conductors. To be hazardous, electrical conductors must be close enough to each other to allow current to pass through air in proximity to a worker.



## Thermal

The thermal hazard for batteries is derived from an unintended path for current through shorting material (e.g., metallic jewelry, metallic tools, or other conductive objects) that is in contact with a worker.



Risk assessment (top) and battery sectionalizing (right) can be used to effectively control hazardous electrical energy in battery systems.